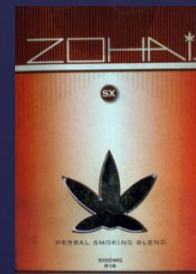


K2, JWH, 2C-E, MDPV?

The Alphabet Soup of Synthetic Drugs



“Synthetic drugs like ‘Spice,’
‘K2,’ and ‘bath salts’ are a
serious threat to the health
and safety of young people
throughout America.”

Gil Kerikowske, Director
Office of National Drug Control Policy
February 15, 2012

June 6, 2010

David Rozga smoked K2 with friends.

Ninety minutes later, he was dead.

David's Story



- “Apparently, some college students who were home for the summer told the boys about a legal substance called K2 that is smoked like marijuana.”
- “It could be easily purchased in stores and a few of the guys had purchased some that weekend at a local mall.”

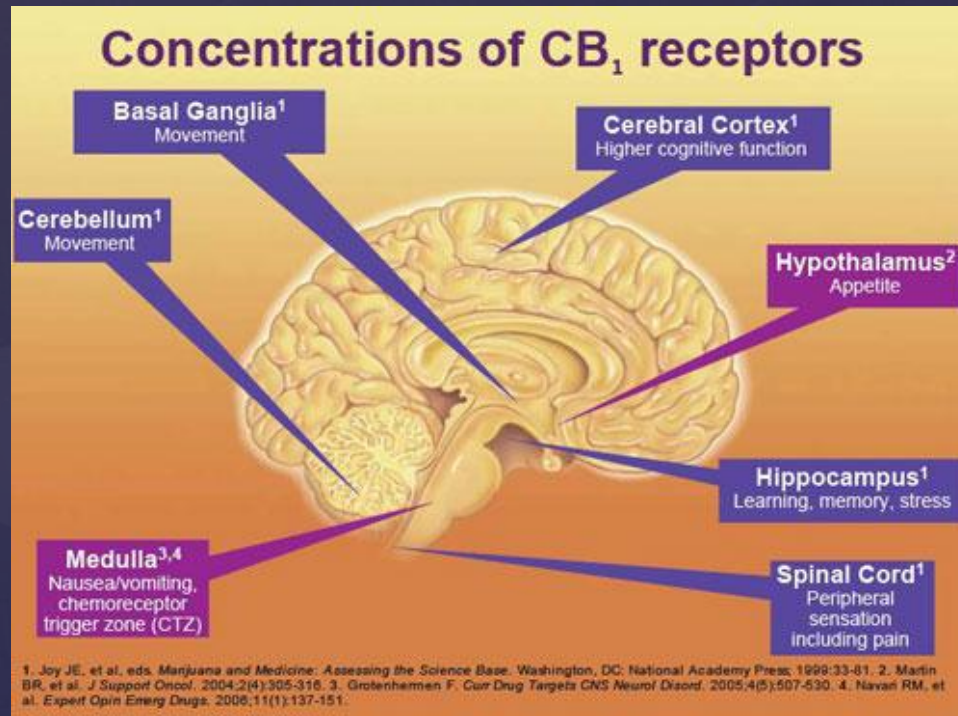
David's Story As Told by His Dad

- “We are a typical family and as any parent of teenagers knows, these are not easy times to raise a family. We’re far from perfect and thought we had all the conversations families are supposed to have...sex, drugs, drinking, texting while driving, you name it.”
- “But, we didn’t talk about what we didn’t know. It is so important that parents talk to their kids about the danger of ingesting anything that isn’t fully known and regulated...legal or not.”
- “When K2 is gone, something else – maybe even more dangerous – will be waiting to take its place so it is vital we talk to our kids.”

What is a synthetic cannabinoid?

“Cannabimimetic Agent” means any substance that is a cannabinoid receptor type 1 (CB1 receptor) agonist as demonstrated by binding studies and functional assays within five identified structural classes.

Where Are Cannabinoid Receptors?



CB1s are among the most abundantly expressed neuronal receptors and are found throughout the brain, including the amygdala.

Synthetic Cannabinoids

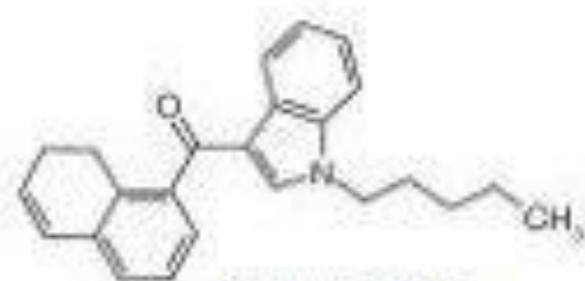
- Represent a growing public health concern, but little information describes these legal products' effects on users.
- Synthetic cannabinoids contain chemicals such as JWH-018 first synthesized in the US in 1995 by John W. Huffman, Ph.D., in a laboratory at Clemson University.
- JWH-018 is a substituted tryptamine.

Synthetic Cannabinoids

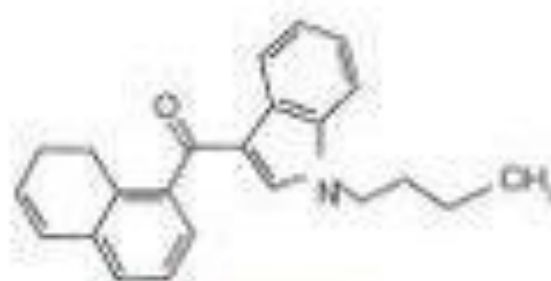
- Tryptamine is involved in a host of neurobiological effects including sleep, dreams and hallucinations.
- Being legally sold as an alternative to marijuana.
- Developed for research purposes and have not been approved by the FDA for human consumption
- Some of these chemicals are reported to be 66-800 times more potent than THC.

Synthetic Cannabinoids

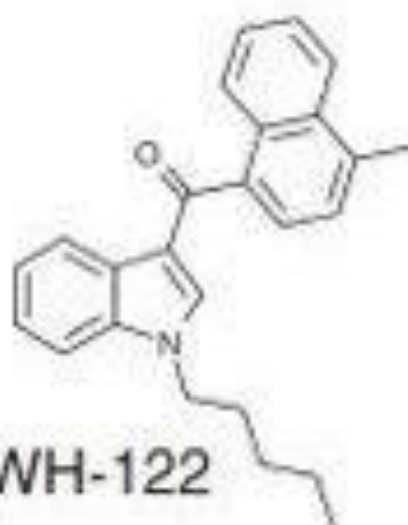
- Sold over the Internet, in smoke and tobacco shops, convenience stores, and head shops.
- There are literally hundreds of cannabinoids which have been synthesized and many are available for sale on the internet, especially JWH-018, JWH-073, JWH-200, JWH-250.



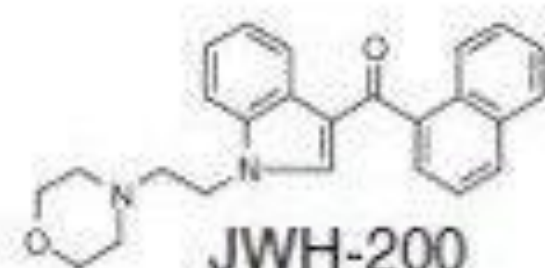
JWH-018



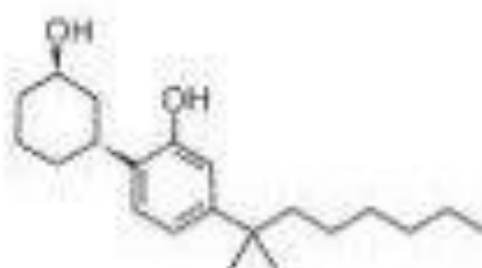
JWH-073



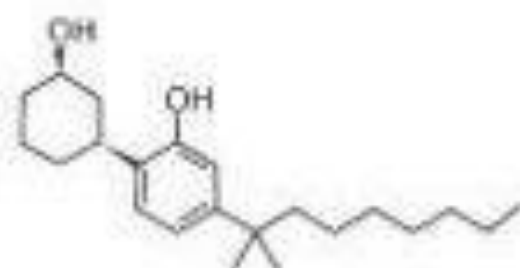
JWH-122



JWH-200



CP47, 497



CP47, 497-C8
(Cannabicyclohezanol)

“It is like Russian roulette to use these drugs. We don’t know a darn thing about them for real.”

John W. Huffman, Ph.D.



Synthetic Cannabinoid Brands



Word on the street: “K4 -
*very dangerous. A lot of people
have gone into comas after
smoking K4. Who knows what
the hell they are spraying it
with.”*

Synthetic Cannabinoid Signs & Symptoms

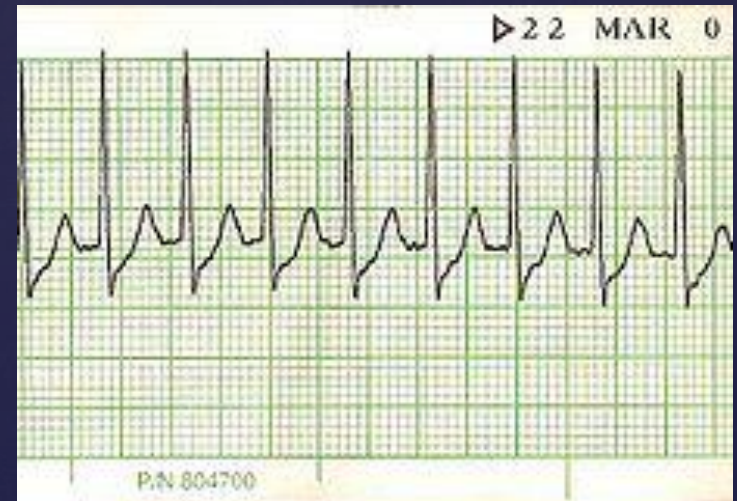
- nausea, vomiting
- drowsiness
- agitation,
- dyspnea, "shakiness"
- palpitations
- headache
- suicidal tendencies
- dizziness
- panic, hallucinations
- agitation, hypertension
- tachycardia
- paranoia
- anxiety

History of Cannabis Abuse

- An ancient Chinese pharmacopoeia shows the plant has been known to be bioactive and psychotropic.
 - Excessive consumption causing “the seeing of devils.”
- This is interesting in that many patients on synthetic cannabinoids have described “descending into hell and seeing the devil” and being extremely agitated and frightened by the experience.

Synthetic Cannabinoids Case Study

- Patient had nausea, vomiting, dizziness
- Hallucinations - “seeing things”
- Felt like she was leaving her body, chest tightness
- Agitation, tremors and anxiety - “panic attack”
- Pale, drowsy
- Syncope (fainting)
- Tachycardia - “SVT on EKG”
- Palpitations, arrhythmia



Other K2 Users Say...

- 8:00 am, October 29, 2010 E-mail
 - “Dr. Scalzo, My name is (*name removed*). I currently attend The University of Cincinnati's Clermont campus. I recently heard about K2 from a friend of mine. I have been smoking marijuana regularly for some time now so i was curious about a "legal weed". As i learned more about it I grew increasingly interested. Long story short, I smoked some and it is terrible. It causes terrible anxiety, difficulty thinking, and depression. It worries me deeply. I could see in large doses, that it may create an increase in the risk of suicide. I read an article that said it was hard to find willing test subjects to study the effects. I want to help in some way. I am concerned that this drug will end up causing serious harm. I know this is very informal and I apologize as I'm sure you're very busy. If I can help anyway please have someone contact me. Thank You for your time.”

Another Synthetic Cannabinoid User:

- December 10, 2010 sent via e-mail to Mr. Rozga
- “Ok I have smoked k2 for about a year straight now every single day and about 3 grams a day. You probably don't believe me most people don't and I would like to say that over these few months it has been getting STRONGER AND MORE POTENT. Up until recently I've been fine usually the high is really intense and when i say really intense I mean 10-50x stronger then your average Kindbud. I have so many stories but in all reality k2 does mess up alot YOUR LIFE, YOUR BRAIN, and mostly YOUR FUTURE. I am not alot of these bullshit parents our teens that have smoked once or twice I am a VET in this shit. I have got to say I have gotten EXTREMELY paranoid EXTREMELY light headed and I have thrown up from it but the high is so addictive you crave it no matter how nuts the last high was. I have had times I can not comprehend ANYTHING NOTHING AT ALL and my eyes roll in the back of my head and I feel like the whole world is upside down. After every single high on k2 you get EXTREMELY tired. Some people when they smoke k2 it gives them headaches not for me I got over that after the first 5 bowls. Im just putting this out there for teens that may read this I am 15 years old and I recently just got expelled from my Highschool for dealing k2 and now I am done with the shit one of the main reasons people smoke it is because they are either one DIVERSION or PROBATION and want to pass drug tests so they smoke k2 for a substitution for weed. But up until recently the only way you could get tested for k2 was if you were on state ward or drug core but now they are only \$60 dollars. K2 has become illegal and will stay that way forever I think this whole k2 epidemic is over with now that It is illegal. I say if you are on Probation like me and smoke marijuana and do not plan on stopping then smoke weed no matter what b/c sure you may get in trouble for it but honestly would you rather get caught for smoking weed and take that misdemeanor or DIE from K2. Im serious guys Im not here to bullshit K2 does kill consider me LUCKY.”

Timeline

- **July 2009:**
- “The System to Retrieve Drug Evidence (STRIDE), a federal database for the seized drugs analyzed by DEA forensic laboratories, and the National Forensic Laboratory System (NFLIS), a system that collects drug analysis information from state and local forensic laboratories, do not contain reports of JWH-018.
- Seizures of herbal mixtures called "Spice" were reported in Ohio and Florida.
- "Spice" is purported to contain JWH-018 and other substances that are similar in pharmacological activity to Δ^9 -THC.”

K2 Use in MO, KS, GA

- Outbreak of K2 in Missouri as well as later occurrence in other states.
 - Noted on daily manual surveillance of cases doing quality review
 - First case in Missouri noted in November 2009
- During 11/09 to 4/10, the MPC managed 40 cases of K2 exposure by individuals ranging in age from 14 to 39 (mean age 21.3 years) who smoked K2.
- As of 9/27/10 we were at 76 total cases in Missouri and 1,503 cases nationally in 48 states

Timeline Continued

- **February 25, 2010:**
- Dr. Anthony Scalzo (MO) met with Dr. John W. Huffman, PhD, Professor, Clemson University to discuss the observed adverse effects of individuals recreationally abusing the synthetic cannabinoids JWH018 in K2.
- Dr. Huffman's opinion was that this was foolish and dangerous.
- Dr. Huffman and his lab developed these research chemicals (JWH018, JWH073, etc) to study the receptors in the brain that bind natural chemicals called endocannabinoids (helpful in our bodies to regulate many functions such as appetite, mood, sense of well-being, the immune system).
- These chemicals were never meant to be used in humans.

Timeline Continued

- **March 5, 2010:**
- Personal communication to Dr. Scalzo from DEA Field Agent, St. Louis Intelligence Office
 - K2 selling for \$20 per 3 gram packet with no ingredients on packaging
 - “Knock-off” brands selling for \$50 per 3 gram packet with full ingredients
 - Store owner stated that he was doing \$7,000/day sales of K2
 - Legal in all counties in Missouri except St. Charles



K2: Coming Soon to Your ER



More dangerous than marijuana...and legal

K2 is a popular mixture of herbs and spices that are sprayed with a psychoactive chemical and sold as a legal marijuana substitute in shops and via the internet. During the last few weeks the Missouri Poison Center (MPC) has identified more than 25 cases of youth (ranging from 14 to 21 years) who, after smoking K2, presented to emergency departments with the following adverse symptoms:

- agitation
- anxiety
- tachycardia
- hypertension
- vomiting
- hallucinations

As part of our ongoing public health efforts, MPC needs your help in identifying and obtaining urine samples* of K2 users for possible contaminants.

*See details on following pages.

MO
Poison
Control
Center,
2010

Synthetic Cannabinoid Homologs

- As of November 22, 2010 there were over 2,304 adverse effects cases reported to national poison centers in 48 states and Washington, DC.
- November 24, 2010, the DEA announced emergency control of 5 synthetic cannabinoids under the CSA
- By December 21, 2010, the AAPCC reported 2,752 calls regarding synthetic homologs in 49 states and the District of Columbia for the following:
 - K2, Spice, Zohai, Sence, Yucatan, Genie, Smoke, Fire, and Skunk.

Most Recent National Data

“In 2010, our centers responded to 3,200 calls related to synthetic drugs. In 2011, that number jumped to more than 13,000 calls. Sixty percent of the cases involved patients 25 and younger.”

Deborah Carr, American Association of Poison Control Centers

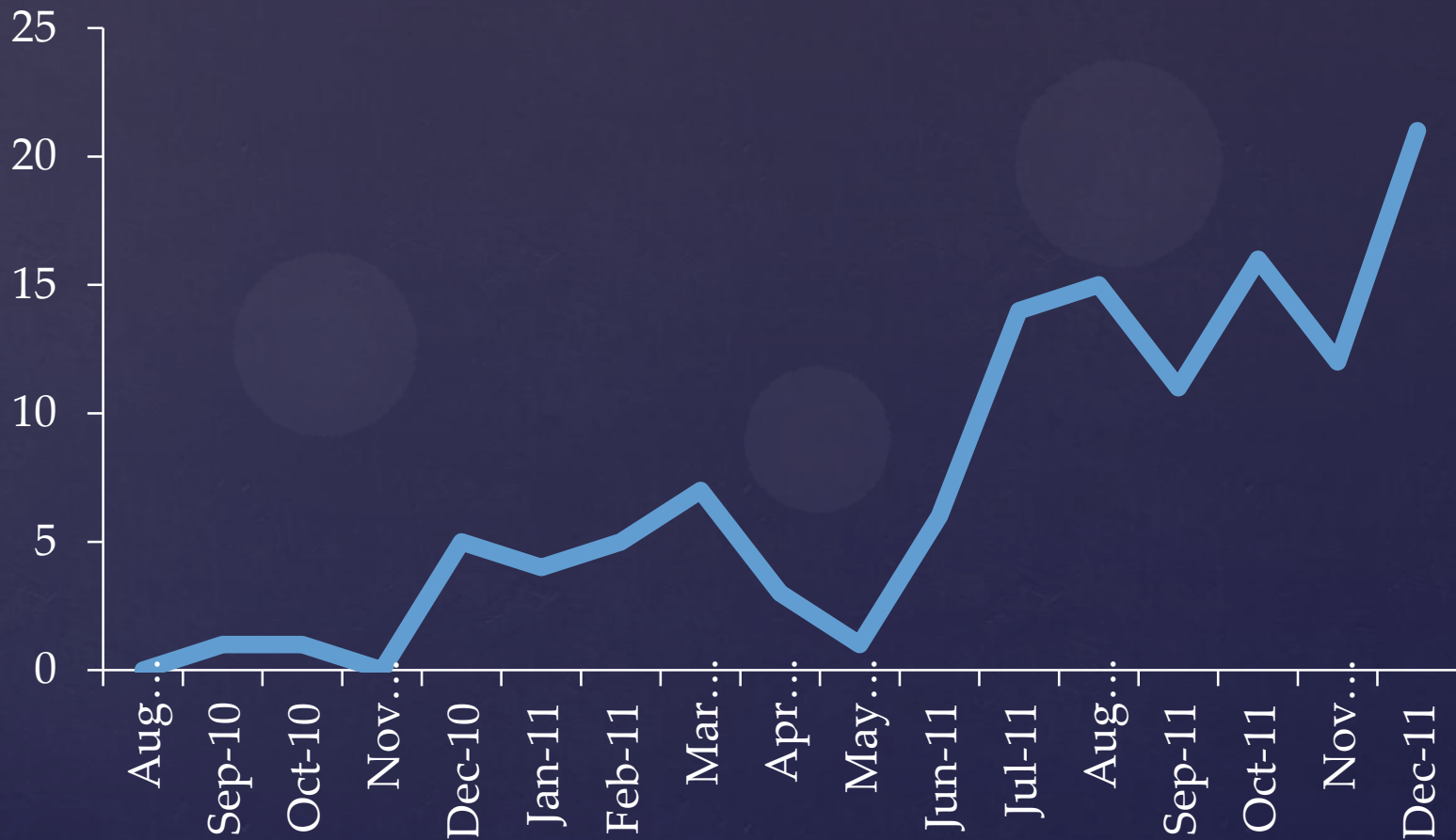
Cannabinoids National Data

These numbers reflect human exposure calls to poison centers about synthetic cannabinoids.

Year	Number of Calls
2010	2,906
2011	6,959
2012 (as of Jan. 31 st)	639

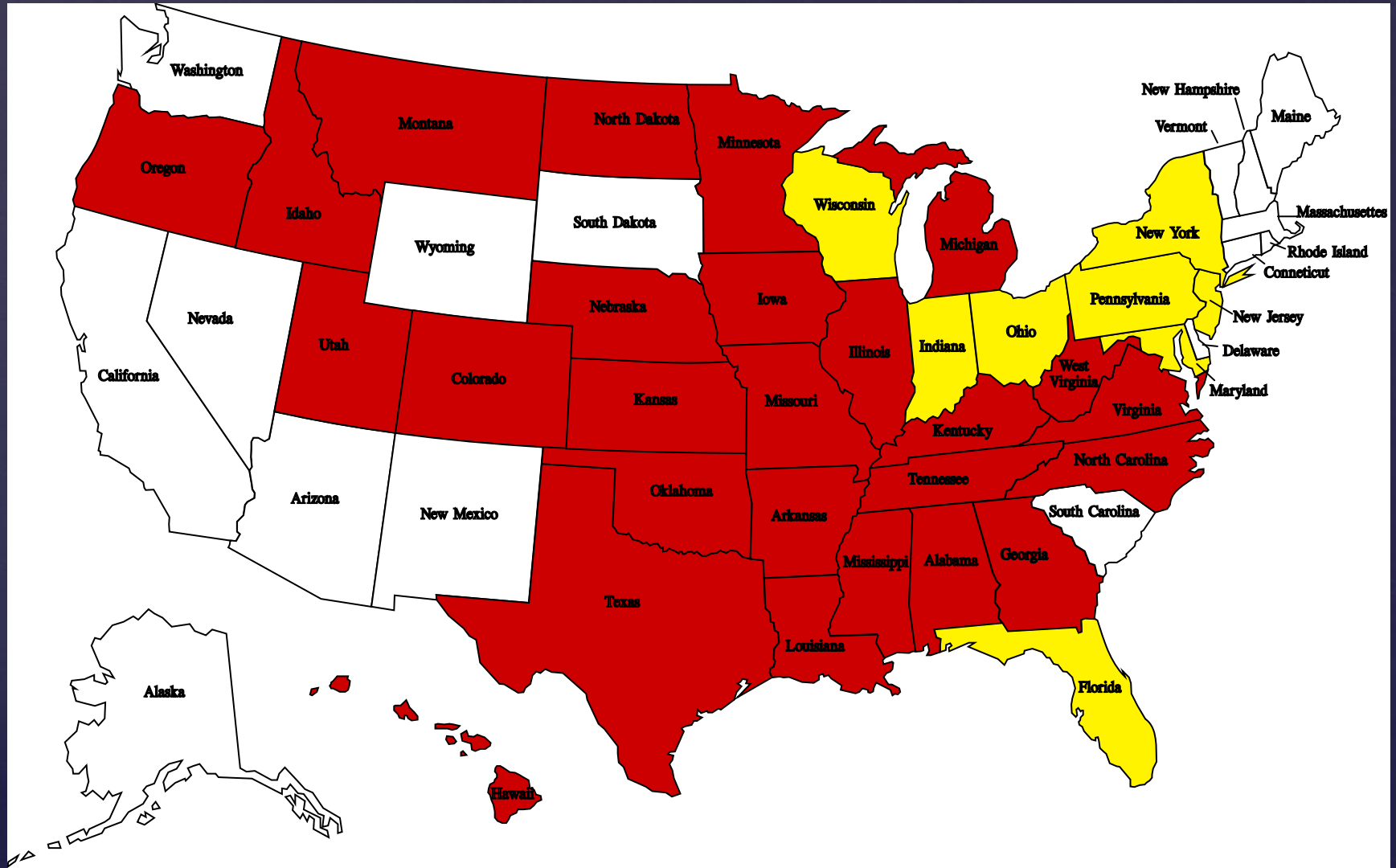
American Association of Poison Control Centers

Synthetic Cannabinoid Exposure Calls, Iowa



Source: Iowa Statewide Poison Control Center

K2drugfacts.com



As of February 2012

Synthetic Cathinones

<http://www.doctoroz.com/videos/deadly-new-drug-pt-2>

What is cathinone?

- A derivative of cathinone, a naturally occurring stimulant found in the Khat plant.
- Khat (*Catha edulis*) is native to East Africa, where its leaves are chewed for their stimulating effects.
- Cathinone is a Schedule I Controlled Substance.

Khat

- Used since 15th century
- Native to tropical East Africa & the Arabian peninsula
 - Somalia
 - Ethiopia
 - Kenya



Synthetic Cathinones

- AKA: Bath Salts, Ivory Wave, Cloud Nine, Bliss, Tranquility, Blue Silk, Blizzard, Ocean Burst, Vanilla Sky, etc.
- NOT real bath salts! They are referred to as novelty items, and are labeled “not for human consumption” to evade scrutiny.
- Also marketed as bath crystals, plant food, and herbal incense.

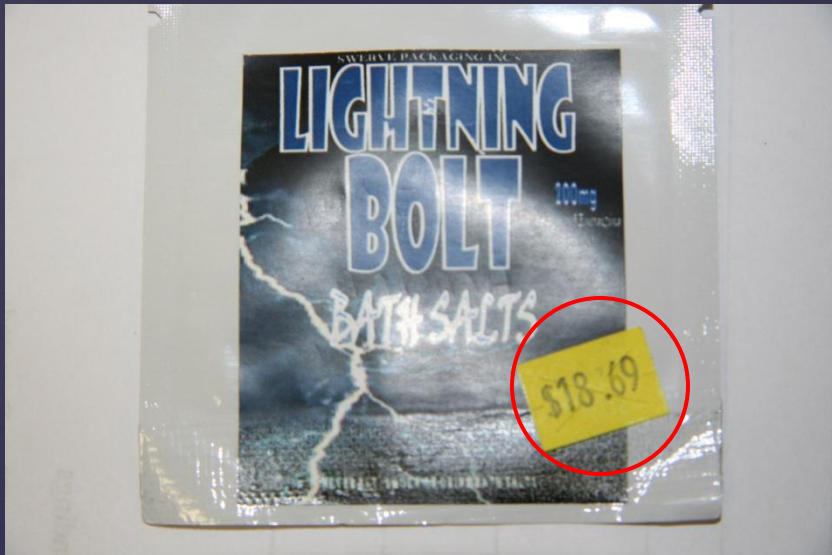
“When Neil Brown got high on bath salts, he took his skinning knife and slit his face and stomach repeatedly. Brown survived, but authorities say others haven't been so lucky after snorting, injecting or smoking powders with such innocuous-sounding names as Ivory Snow, Red Dove and Vanilla Sky.”

The Washington Post. Web
January 23, 2011

Synthetic Cathinone Brands



Synthetic Cathinone Brands

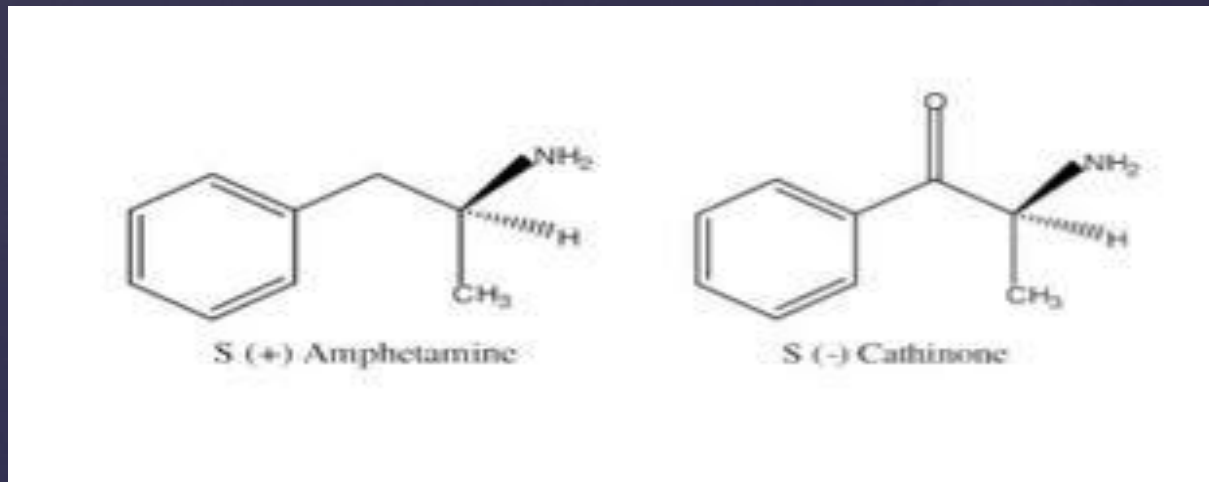


Synthetic Cathinones

- Described as a white, tan or brown odorless, powdery substance.
- Compounds are central nervous stimulants.
- Effects are similar to cocaine, methamphetamine, or MDMA.
- Sometimes called “fake” cocaine or “fake” meth.
- Can be snorted, injected, or eaten.

Synthetic Cathinones

- Cathinone related to Amphetamine



- Methcathinone is the cathinone analogue of methamphetamine
- 3,4-Methylenedioxymethcathinone (Methylone) is the cathinone analogue of MDMA (Ecstasy)

Synthetic Cathinones

- MDPV and mephedrone can cause intense cravings and can lead to binges lasting several days.
- Sold at tobacco shops, convenience stores, gas stations, head shops, and truck stops among others; and via the Internet.
- The various brands are sold in 50-milligram to 500-milligram packets. Prices range from \$25 to \$50 or more per 50-milligram packet.
- MDPV and mephedrone are currently Schedule I Controlled Substances in Iowa.

New Wave of Legal Highs



.2 g = \$39.00

.5 g = \$69.00



Physical Effects

- Racing heartbeat
- Extreme elevations of blood pressure
- Sleeplessness
- Loss of appetite, Nausea
- Strange eye movements
- White powder on nostrils or lips
- Elevated BP
- Agitation

Psychological Effects

- Varying but often extreme paranoia
 - Abusers running naked with knives trying to “cut out wires that are in their bodies”
 - Shooting themselves, others or inanimate objects/walls
- Delusions, Hallucinations
- Suicidal Tendencies
- Extreme agitation or anxiety, change in personality, depression, aggression or disturbed behavior, delusions, hostility, violence

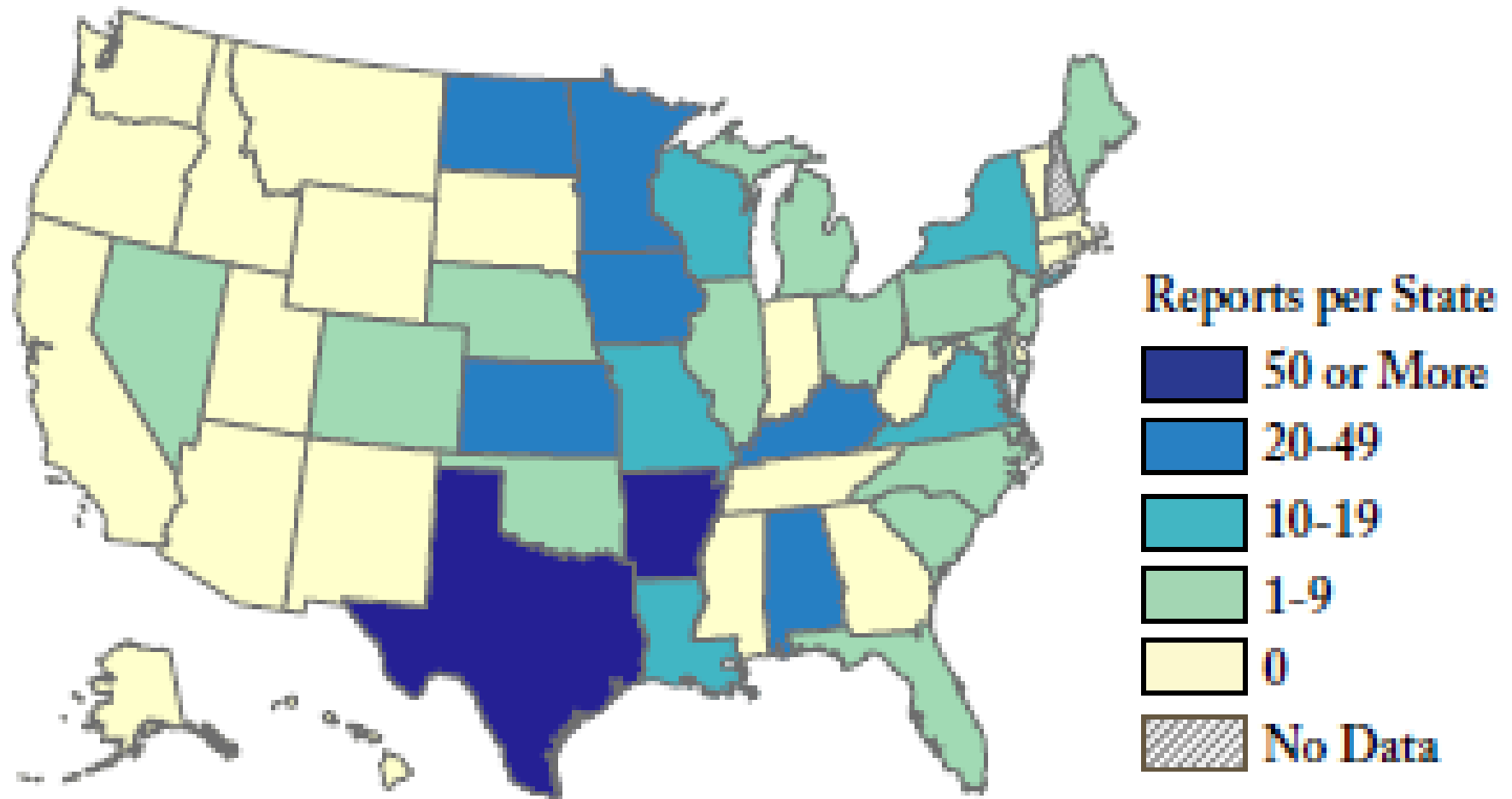
Bath Salts National Data

These numbers reflect human exposure calls to poison centers about bath salts.

Year	Number of Calls
2010	304
2011	6,138
2012 (as of Jan. 31 st)	228

American Association of Poison Control Centers

Figure 2. Synthetic cathinone reports in NFLIS, by State, 2010



Synthetic Cathinone Exposure Calls, Iowa



Source: Iowa Statewide Poison Control Center

Article titled “The Chinese laboratories where scientists are already at work on the new ‘meow meow.’”



Mail Online (Newspaper in the UK) Mike Power & Simon Parry. 10-19-11

Synthetics Legislation

- Iowa Board of Pharmacy took emergency action in the summer of 2010, making K2 illegal an imitation controlled substance.
- Iowa passed Legislation banning six synthetic cannabinoid compounds and two synthetic cathinones in July 2011:

Cannabinoids		Cathinones
CP 47,497	JWH-018	Mephedrone
JWH-073	JWH-200	MDPV
HU-210	HU-211	

Synthetics Legislation

- The DEA in January temporarily placed five of the synthetic cannabinoids into Schedule I of the CSA.
- Congress is currently working to permanently ban many more of both the synthetic cannabinoids and cathinones.
- A bill in the Iowa Legislature would do the same.

And yet, websites selling synthetic drugs are still flourishing on the internet...

- Synthetic.buycheapr.com
- smoK2.com
- revolutionincense.com
- BuyK2spice.net
- someincense.com
- Syntheticcannabis.com.au
- K2forless.com...just to name a few.

You want bulk?

“K2forless.com”



K2 Blue - 100
Grams Bulk

\$525.00

K2 Blue - 1/4
Kilogram Bulk
(250 Grams)

\$1,050.00

K2 Blue - 1
Kilogram Bulk
(Free Fedex
Shipping)

\$3,800.00

Actions You Can Take

- Parents – Talk to your kids
- Report suspicious activity to law enforcement
- Police Officers – submit products to lab for testing

Resources

Iowa Substance Abuse Information Center

- www.drugfreeinfo.org
- 1-866-242-4111 – 24/7 Helpline

The Partnership At Drugfree.org

- TimeToTalk.org (HablaConTusHijos.org) and
- Time to Act and Intervention Blog/eBook
- Treatment eBook
- Time to Get Help – parents & community
- PACT 360
- Helpline, 1-855-DRUGFREE (378-3733)